

ABSTRACT OF THE DISCLOSURE

A centrifuge with a rotor set-up having at least one magnetic bearing is invented to operate a novel centrifuge. The rotor arrangement is connected with at least one permanent magnet configuration which is radially and/or axially separated by small gap from a passive superconducting magnet stator. The permanent magnets which are adjusted in such a way that the escaping magnetic flux penetrates the adjacent surface of the passive superconducting magnet stator at a substantially perpendicular orientation. A driving motor unit, preferably in the form of a contactless induction engine, ensures a free and frictionless rotation. The passive superconducting magnet stator is comprised a melt textured superconducting YBCO material of high critical current density which can be cooled below its critical temperature of $T = 92$ K using an integrated cryogenic unit to obtain the superconducting state. The stator has a preferred shape of a cylinder or hollow cylinder.

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